

CLAIMS

1. A method for producing expandable beads of a styrene-modified linear low-density polyethylene-based resin comprising, in the order recited, the steps of:
 - 5 dispersing 100 parts by weight of non-crosslinked linear low-density polyethylene-based resin beads, 30 to 300 parts by weight of a styrene-based monomer, and 0.1 to 0.9 parts by weight of a polymerization initiator relative to 100 parts by weight of the styrene-based monomer into a
 - 10 suspension containing a dispersant;
- impregnating the styrene-based monomer into the low-density polyethylene-based resin beads by heating a resultant dispersion at such a temperature that polymerization of the styrene-based monomer does not substantially take place;
- 15 performing a first polymerization of the styrene-based monomer at a temperature of higher than $(T-8)$ °C and lower than $(T+1)$ °C (where T °C is a melting point of the low-density polyethylene-based resin beads);
- 20 adding a styrene-based monomer and 0.1 to 0.9 parts by weight of a polymerization initiator relative to 100 parts by weight of the styrene-based monomer when a conversion ratio of polymerization reaches to 80 to 99.9%, and performing impregnation of the styrene-based monomer into the
- 25 low-density polyethylene-based resin beads and a second

polymerization of the styrene-based monomer at a temperature of higher than (T-15) °C and lower than (T+5) °C (where T °C is a melting point of the polyethylene-based resin beads) (wherein a total amount of the styrene monomers used in the

5 first and second polymerizations is more than 300 parts by weight and not more than 1000 parts by weight relative to 100 parts by weight of the low-density polyethylene-based resin beads); and

10 impregnating a volatile blowing agent during or after the polymerization,

whereby resin components of the expandable beads contain a gel component comprising 2 to 40 wt% of a graft polymer.

2. A method for producing expandable beads of a

15 styrene-modified linear low-density polyethylene-based resin according to Claim 1, wherein the second polymerization is performed at a temperature in a range of higher than (T-8) °C and lower than (T+1) °C.

3. A method for producing expandable beads of a

20 styrene-modified linear low-density polyethylene-based resin according to Claim 1, wherein the linear low-density polyethylene-based resin beads each have a substantially spherical shape or a cylindrical shape having an L/D (where L is a length of each bead and D is a diameter of each bead) of

25 0.6 to 1.6, and an average bead size of 0.2 to 1.5 mm.

4. Expandable beads of a styrene-modified linear low-density polyethylene-based resin comprising a volatile blowing agent and a base resin, the base resin containing more than 300 parts by weight and less than 1000 parts by weight of a polystyrene-based resin component relative to 100 parts by weight of a non-crosslinked linear low-density polyethylene-based resin component, wherein the base resin contains 2 to 40 wt% of a gel component comprising a graft copolymer of the polystyrene-based resin component and the 10 low-density polyethylene-based resin component.

5. Expandable beads of a styrene-modified linear low-density polyethylene-based resin obtained by the method of Claim 1.

6. Pre-expanded beads having a bulk density of 20 to 15 200 kg/m³, obtained by pre-expanding the expandable beads of the styrene-modified linear low-density polyethylene-based resin of Claim 4 or 5.

7. An expanded molded article having a density of 20 to 200 kg/m³, obtained by expansion molding of the pre-expanded beads of Claim 6.